<< 运算符（C# 参考）

左移运算符 (<<) 将第一个操作数向左移动第二个操作数指定的位数。The left-shift operator (<<) shifts its first operand left by the number of bits specified by its second operand. 第二个操作数的类型必须为 [int](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/int) 或预定义隐式数值转换为 int 的类型。The type of the second operand must be an [int](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/int) or a type that has a predefined implicit numeric conversion to int.

备注Remarks

如果第一个操作数是 [int](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/int) 或 [uint](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/uint)（32 位数），则移位计数由第二个操作数的低序五位给定。If the first operand is an [int](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/int) or [uint](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/uint) (32-bit quantity), the shift count is given by the low-order five bits of the second operand. 也就是说，实际的移位计数为 0 到 31 位。That is, the actual shift count is 0 to 31 bits.

如果第一个操作数是 [long](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/long) 或 [ulong](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/ulong)（64 位数），则移位计数由第二个操作数的低序六位给定。If the first operand is a [long](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/long) or [ulong](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/ulong) (64-bit quantity), the shift count is given by the low-order six bits of the second operand. 也就是说，实际的移位计数为 0 到 63 位。That is, the actual shift count is 0 to 63 bits.

将丢弃移位后不在第一个操作数类型范围内的任何高序位，低序空位补零。Any high-order bits that are not within the range of the type of the first operand after the shift are discarded, and the low-order empty bits are zero-filled. 移位操作从不导致溢位。Shift operations never cause overflows.

用户定义的类型可以重载 << 运算符（参阅[运算符](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/operator)）；第一个操作数的类型必须是用户定义的类型，第二个操作数的类型必须是 int。User-defined types can overload the << operator (see [operator](https://docs.microsoft.com/zh-cn/dotnet/csharp/language-reference/keywords/operator)); the type of the first operand must be the user-defined type, and the type of the second operand must be int. 重载二元运算符时，也会隐式重载相应的赋值运算符（若有）。When a binary operator is overloaded, the corresponding assignment operator, if any, is also implicitly overloaded.